



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,283	06/01/2006	Juergen Dohmann	4601-0113PUS1	3130
2292 7590 04/09/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
BONK, TERESA				
ART UNIT		PAPER NUMBER		
3725				
NOTIFICATION DATE		DELIVERY MODE		
04/09/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

# Office Action Summary

**Application No.**

10/581,283

**Applicant(s)**

DOHMANN ET AL.

**Examiner**

TERESA BONK

**Art Unit**

3725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 6/1/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because it does not commence on a separate sheet of paper. Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 10, 12, 13, 16-20, 22, and 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Daido Steel Co Ltd (JP 58-218339). Daido Steel Co Ltd discloses a die apparatus for performing a flashless (“no flash is generated,” Abstract) forging operation to manufacture the toothed portion of a steering rack (16), said die apparatus comprising first (24, 40, 58) and second (20, 30, 50) die members and at least one punch member (56), each having a forming surface (32) shaped substantially as the obverse of a portion of said toothed portion, and at least a portion of the forming surface (44) of said first die member being shaped substantially as the obverse of the teeth of said rack, characterized in that said first and second die members are moveable towards each other to a closed position (From Figure 3 to Figure 4, or Figure 6 to Figure 7, or from Figure 8 to Figure 9 to Figure 10, or from Figure 11 to 12) thereby partially forging said toothed portion from a blank placed in said die apparatus and forming a

substantially closed cavity defined by said forming surfaces, said punch member being adapted to move into said cavity (Figures 10 and 12), once said die members are in said closed position, thereby completing said forging operation. The punch member is disposed substantially centrally and opposite the first die member (Figure 11). The punch member is moveable with respect to the first die member and wherein the punch member is opposite and moveable towards the second die member.

With regards to claim 2, Daido Steel Co Ltd discloses wherein said punch member is moveable into said closed cavity through an aperture in one of said die members (Figure 11).

With regards to claim 5, Daido Steel Co Ltd discloses wherein said die members abut against each other at said closed position (Figures 10 and 12).

With regards to claims 10, 18, and 25, Daido Steel Co Ltd discloses wherein the cross section of the toothed portion is substantially D-shaped (Figure 2).

With regards to claim 12, Daido Steel Co Ltd discloses wherein the blank is cylindrical (38).

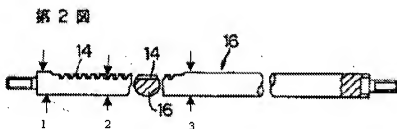
With regards to claim 13, Daido Steel Co Ltd discloses wherein the blank is a hollow bar ("hollow pipe," hollow pipe") and the die apparatus comprises a mandrel (60) adapted to be inserted into the hollow bar prior to the forging operations (Figure 11).

With regards to claim 16, Daido Steel Co Ltd discloses a method of manufacturing a steering rack (16) comprising performing a forging operation on a blank by means of a die apparatus as claimed.

With regards to claim 17, Daido Steel Co Ltd discloses wherein the teeth of said steering rack are forged to a net shape (no further machining is discussed after forging) by the forging operation.

With regards to claim 19, Daido Steel Co Ltd discloses a blank having a first cylindrical portion (1) and a second cylindrical portion (2) smaller in diameter than the first cylindrical portion, the second cylindrical portion being forged to form the toothed portion of said steering rack, the shaft of said steering rack comprising said first cylindrical portion. See attached Figure 2.

With regards to claim 20, Daido Steel Co Ltd discloses a blank further comprising a third cylindrical portion (3), substantially equal in diameter to the first cylindrical portion, the second cylindrical portion being between the first and third cylindrical portions. See attached Figure 2.



With regards to claim 22, Daido Steel Co Ltd discloses that said punch member is adapted to perform an inward movement and thereby urge said partly forged blank to substantially fill said cavity (Figure 12).

With regards to claim 24, Daido Steel Co Ltd discloses wherein the punch member enters the cavity via a peripheral aperture located in at least one of said die members (Figures 8 and 11).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daido Steel Co Ltd. Daido Steel Co Ltd discloses the invention substantially as claimed except for wherein said aperture is in the second die member and the punch member is moveable with respect to the second die member and wherein the punch member is opposite and moveable towards the first die member. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aperture on the second die member, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art.
5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daido Steel Co Ltd in view of Ohama et al. (US Patent 6,044,684). Daido Steel Co Ltd discloses the invention substantially as claimed except for wherein the at least one punch member comprises first and second punch members disposed on opposite sides of the cavity, between the first and second die members and wherein the punch member is moveable by means of a mechanism that comprises at least one wedge member adapted to urge the punch member into the cavity operated by the motion of the die apparatus closing. Ohama et al. discloses a forging apparatus wherein the at least one punch member comprises first (40) and second (36) punch members disposed on opposite sides of the cavity, between the first (14) and second (12) die members and wherein the

punch member is moveable by means of a mechanism that comprises at least one wedge member (26) adapted to urge the punch member into the cavity operated by the motion of the die apparatus closing (Figure 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an additional punch member and a wedge member because the use of a known technique improves similar devices in the same way.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daido Steel Co Ltd in view of Ross et al. (US Patent 3,802,248). Daido Steel Co Ltd discloses the invention substantially as claimed except for wherein at least one of said die members is supported by a hydraulic cylinder pressurized by means of the die apparatus closing. Ross et al. discloses a forging press wherein at least one of said die members is supported by a hydraulic cylinder (Column 1, lines 43-47) pressurized by means of the die apparatus closing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a hydraulic cylinder because applying a known technique to a known device ready for improvement yields predictable results.

7. Claims 11, 14, 15, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daido Steel Co Ltd in view of Prens (US Patent 4,838,062). Daido Steel Co Ltd discloses the invention substantially as claimed except for wherein the die apparatus further comprises at least one axially moveable end punch adapted to upset an end of the solid bar blank; wherein the blank is heated to a warm forging temperature prior to the forging operation; and wherein the rack is finish forged after the punch member has completed the inward movement. Prens discloses a forging apparatus wherein the die apparatus further comprises at least one axially moveable end punch (92) adapted to upset (Column 8, lines 4-26) an end of the solid bar blank

(24); wherein the blank is heated to a warm forging temperature prior to the forging operation (Column 6, lines 53+); and wherein the rack is finish forged after the punch member has completed the inward movement (second pass, Column 7, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute Daido Steel Co Ltd's punch member for Prens's end punch member because simple substitution of one known element for another obtains predictable results. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide warming forging and finish forging steps because applying a known technique to a known device ready for improvement yields predictable results.

#### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TERESA BONK whose telephone number is 571-272-1901. The examiner can normally be reached on M-F 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on 571-272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Derris H Banks/  
Supervisory Patent Examiner, Art Unit 3725

Teresa M. Bonk  
Examiner  
Art Unit 3725